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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,918	09/05/2003	Robin M. Forbes Jones	TAV-2044	8375
<div>7590 02/27/2007 Patrick J. Viccaro, Esquire Allegheny Technologies Incorporated 1000 Six PPG Place Pittsburgh, PA 15222-5479</div>			<div>EXAMINER ROE, JESSEE RANDALL</div> <div>ART UNIT 1742 PAPER NUMBER</div>	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		02/27/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/656,918

Applicant(s)

FORBES JONES ET AL.

Examiner

Jessee Roe

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4-8,10,12-20 and 32-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-8,10,12-20 and 32-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 29 August 2006.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Status of Claims***

Claims 1-2, 4-8, 10, 12-20 and 32-34 remain for examination wherein claims 1, 5-7, 12-15 and 32 are amended and claims 3, 9, 11, 21-31 and 35-52 are canceled.

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5 December 2006 has been entered.

### ***Information Disclosure Statement***

US Patent Publication 2001/0068965 as listed on the Information Disclosure Statement is incorrect. The correct number for this US Patent Publication is US 2002/0068965. The document has been considered and is referenced in the PTO-892 attached herewith.

### ***Status of Previous Rejections***

The previous rejection of claims 1-2, 4-8, 10, 16-20 and 32-34 under 35 U.S.C. 103(a) as being unpatentable over ASTM F 562-02 in view of Cockcroft (Inclusions and the EB Refining of Superalloys) is withdrawn in light of the Applicant's amendments to the claims. The previous rejection of claims 12 and 14 under 35 U.S.C. 103(a) as being

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unpatentable over ASTM F 562-02 in view of Cockcroft (Inclusions and the EB Refining of Superalloys) and further in view of Snape (US 3,816,106) is withdrawn in light of the Applicant's amendments to the claims. The previous rejection of claim 13 under 35 U.S.C. 103(a) as being unpatentable over ASTM F 562-02 in view of Cockcroft (Inclusions and the EB Refining of Superalloys) and further in view of Susukida (US 4,474,733) is withdrawn in light of the Applicant's amendments to the claims.

***Allowable Subject Matter***

The indicated allowability of claim 15 is withdrawn in view of newly discovered reference(s). Rejections based on the newly cited reference(s) follow.

***Claim Objections***

Claim 14 is objected to because of the following informalities: "weight percent" should be deleted. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in

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the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 recites the addition of "at least 0.05 weight percent aluminum, at least 5 ppm calcium, at least 5 ppm magnesium, and at least 5 ppm cerium". The originally filed specification and originally filed claims do provide support for the lower limits but do not provide support for the theoretical upper limit of these proportions (i.e. 100 weight percent).

Claims 2, 4-8, 10, 12-20 and 32-34 are rejected because of their dependence on a rejected base claim.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4-8, 10, 12, 16-20 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US 3,356,542).

In regards to claims 1-2, 4, 6, 8, 10 and 12, Smith ('542) discloses an alloy having favorable fatigue resistance (col. 1, line 62 – col. 2, line 14). A comparison of the alloy disclosed by Smith ('542) in comparison with that of the instant invention is shown in the table on the following page.

<b>Element</b>	<b>From Instant Claims (weight percent, except N)</b>	<b>Smith ('542) (weight percent)</b>	<b>Overlapping range</b>
<b>Claim 1</b> (col. 4, line 23 –col. 5, line 11)			
Co	at least 20	at least 25	at least 25
Ni	32.7-37.3	5-45	32.7-37.3
Cr	18.75-21.25	13-25	18.75-21.25
Mo	8.85-10.65	7-16	8.85-10.65
N	less than 30 ppm	0-0.05	0-30 ppm
Ti	less than 0.7	0-2.0	0-less than 0.7
Al	at least 0.05	0-2.0	0.05-2.0
Fe	less than 1.05	0-6.0	0-less than 1.05
<b>Claim 2</b> (col. 4, line 23 –col. 5, line 11)			
N	less than 20 ppm	0-0.05	0-less than 20 ppm
<b>Claim 4</b> (col. 4, line 23 –col. 5, line 11)			
Ti	less than 0.03	0-2.0	0-less than 0.03
<b>Claim 6</b> (col. 4, line 23 –col. 5, line 11)			
Ni	33-37	5-45	33-37
Cr	19-21	13-25	19-21
Mo	9-10.5	7-16	9-10.5
<b>Claim 8</b> (col. 4, line 23 –col. 5, line 11)			
N	less than 20 ppm	0-0.05	0-less than 20 ppm
<b>Claim 10</b> (col. 4, line 23 –col. 5, line 11)			
Ti	less than 0.03	0-2.0	0-less than 0.03
<b>Claim 12</b> (col. 4, line 23 –col. 5, line 11)			
Al	0.05-0.15	0-2.0	0.05-0.15

The ranges disclosed by Smith ('542) for cobalt, nickel, chromium, molybdenum, nitrogen, titanium, aluminum, and iron are within the ranges claimed of the instant invention. The Examiner notes that the disclosed composition of the alloy overlaps with the composition of the claimed invention. Therefore, a prima facie case of obviousness exists. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed compositions of an alloy from the compositions disclosed by Smith ('542) because Smith ('542) discloses the same utility (alloy wire) throughout the disclosed ranges.

Still regarding claim 1, Smith ('542) does not specify wherein the alloy would

include spherical oxide inclusions and be substantially free of titanium nitride and mixed metal carbonitride inclusions. However, the composition of titanium, nitrogen, and carbon within the alloy can be non-existent as specified by Smith ('542) (col. 4, line 69 – col. 5, line 11). . Further, Smith ('542) discloses arc melting and induction melting in a vacuum atmosphere as methods of preparing the alloy, which would be substantially the same techniques of producing the alloys of the instant invention (col. 4, lines 23-42, col. 5, lines 11-30). Therefore, in absence of evidence to the contrary, it would be expected that the alloys of Smith ('542) would have generally spherical oxide inclusions and be substantially free of titanium nitride and mixed metal carbonitride inclusions. See MPEP 2112.01 I.

In regards to claim 5, the Examiner notes that neither the instant invention nor the alloy disclosed by Smith ('542) necessitate the presence of manganese, phosphorus, silicon or sulfur. Smith ('542) discloses that the carbon content and boron content would be maintained to less than 0.05 weight percent (col. 4, line 68 – col. 5, line 2).

In regards to claim 7, the Examiner notes that neither the instant invention nor the alloy disclosed by Smith ('542) necessitate the presence of manganese, phosphorus, silicon, or sulfur. Smith ('542) discloses that the carbon content and boron content would be maintained to less than 0.05 weight percent and the content of iron would be less than 6 weight percent (col. 4, line 23 – col. 5, line 2).

In regards to claim 16, Smith ('542) discloses an alloy having favorable fatigue resistance and teaches adding no more of 2 weight percent each and no more than 4

weight percent total of aluminum, titanium, and zirconium to prevent embrittlement and grain boundary second phase formation and the oxygen content would be no more than 0.05 weight percent (which includes 0 weight percent) (col. 4, line 69 – col. 5, line 11). Smith ('542) further discloses the same alloy composition formed by a substantially similar process. Therefore, the material properties of the alloy would be expected to be similar. See MPEP 2112.01 I.

In regards to claim 17, Smith ('542) discloses an alloy having favorable fatigue resistance and teaches adding no more than 2 weight percent each and no more than 4 weight percent total of aluminum, titanium, and zirconium (which includes 0 weight percent) (col. 4, line 69 – col. 5, line 11). Therefore, the alloy would not necessarily be comprised of titanium or the alloy may contain a very small content of titanium and hence be substantially free of titanium.

In regards to claim 18, Smith ('542) discloses an alloy having favorable fatigue resistance and teaches adding no more than 0.05 weight percent each and no more than 0.10 weight percent (which includes 0 weight percent) of carbon, boron, oxygen, nitrogen or beryllium. Therefore, the alloy would not necessarily be comprised of nitrogen or the alloy may contain a very small content of nitrogen and hence be substantially free of nitrogen.

In regards to claim 19, Smith ('542) discloses an alloy having favorable fatigue resistance and teaches yield strengths of at least 200,000 psi (200 ksi) (col. 5, lines 46-63). Furthermore, Smith ('542) discloses the same composition made by a substantially similar process. Therefore, the properties of the product would inherently be similar.



See MPEP 2112.01 I.

In regards to claim 20, Smith ('542) discloses an alloy having favorable fatigue resistance and teaches an alloy composition having the same composition as the instant invention and a process of making the alloy (vacuum induction melting and vacuum arc melting) that is substantially similar to that of the instant invention. Therefore, it would be expected that alloy would qualify for use in surgical implant applications under ASTM standard specification F 562.

In regards to claims 32-34, Smith ('542) discloses an alloy having favorable fatigue resistance and teaches making the alloy into articles of manufacture including wire and cable (col. 3, lines 64-75). The wire would be made of the same composition as the instant invention and the process of making the alloy (vacuum induction melting and vacuum arc melting) is substantially similar to that of the instant invention. Therefore, it would be expected that the alloy would qualify for use in surgical implant applications under ASTM standard specification F 562.

Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US 3,356,542) in view of Thielemann (US 3,241,954).

Smith ('542) discloses an alloy having favorable fatigue resistance as shown above, but Smith ('542) does not specify wherein calcium and magnesium would be added to the alloy (which would be cobalt-base) in an amount of 5 to 20 ppm and 5 to 50 ppm.

Thielemann ('954) discloses adding calcium and magnesium to an analogous cobalt-base alloy. These elements would be added to deoxidize the alloy in an amount

of no more than 2 weight percent (which would include 5-20 ppm calcium and 5 to 50 ppm magnesium) (col. 2, lines 30-39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add calcium and magnesium in an amount of no more than 2 weight percent (which would include 5-20 ppm calcium and 5 to 50 ppm magnesium), as disclosed by Thielemann ('954), to the alloy having favorable fatigue resistance, as disclosed by Smith ('542), in order to remove oxygen (deoxidize) the alloy, as disclosed by Thielemann ('954) (col. 2, lines 30-39) because Smith ('542) teaches that amounts of carbon, boron, oxygen, nitrogen, or beryllium above 0.05 weight percent would lead to embrittlement (col. 4, lines 69-75).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US 3,356,542) in view of Crook (US 4,353,742).

In regards to claim 15, Smith ('542) discloses an alloy having favorable fatigue resistance as shown above, but Smith ('542) does not specify wherein cerium would be added to the alloy (which would be cobalt-base) in an amount of 5 to 50 ppm.

Crook ('742) discloses adding cerium to an analogous cobalt-base alloy in an amount of 0-5 weight percent (abstract) (which would include 5 to 50 ppm). Cerium would be added to impart good oxidation resistance to the cobalt-base alloy at high temperatures (col. 4, lines 34-44).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add cerium in an amount of 0-5 weight percent (which would include 5 to 50 ppm), as disclosed by Crook ('742), to the alloy having favorable

fatigue resistance, as disclosed by Smith ('542), in order to impart good oxidation resistance to the cobalt-base alloy at high temperatures, as disclosed by Crook ('742) (col. 4, lines 34-44).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-2, 4-8, 10, 12-20 and 32-34 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse Roe whose telephone number is (571) 272-5938. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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JR

  
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